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ON SOME NEW BATRACHIA AND FISHES FROM THE COAL MEASURES
OF LINTON, OHIO.

BY E. D. COPE, A.M.

The following descriptions of some interesting forms are published by permission of Prof. John S. Newberry, who procured the specimens in the course of the geological survey of Ohio, of which he is director.

LEPTOPHRACTUS, Cope, gen. nov.

Established on various portions of the cranium of a large Batrachian allied to the *Labyrinthodontia*. The top of the head is covered with angular plates or scuta arranged in the following manner on the region preserved. Two symmetrical scuta occupy the median line, one in front of the other. One of these is a longish or coffin-shaped hexagonal, with the suture with the other concave. The latter is more ovoid, broad and convex next the first mentioned, and somewhat more contracted at the opposite extremity. Beyond this are two shields joining by a straight suture on the middle line; besides this one, they have two concave sutures for scuta, at the farther end two concave lateral sutures, and a straight one to the adjoining median scutum, whose suture is also concave. On each side of this median plate is a large area surrounded before, outwards, and behind by smaller scuta, three in front, two at the side, and two behind. Commencing with the first, No. 1 has been already described; No. 2 is small, oval, and antero-posterior; No. 3 is an antero-posterior pentagon with the narrowest side inwards; No. 4 is a similar transverse pentagon; No. 5 is an antero-posterior pentagon which presents its shorter lateral facet inwards; No. 6 has a similar character, but is smaller and with more definite angles. Another series of scuta is seen outside of these at one end of the series. Three of this set bound the front and side of each of the median pair above mentioned, leaving a short facet next its fellow unaccounted for.

The sculpture consists of radiating ridges and tubercles which are most broken near the centres of the scuta.

The teeth are rather distantly grooved for some distance above the base. They are of different sizes; the smaller are compressed and with fore and aft cutting edges.

This type is weaker and more slender than *Labyrinthodon*, and the cranial scuta appear to be very thin. It is possible that this part of the specimen may only be a cast, but I am not satisfied of this.

LEPTOPHRACTUS OBSOLETUS, Cope, spec. nov.

The tubercles and ridges of the cranium are obtuse and low, and the latter do not inosculate. An angular depression commences at the middle of each lateral area and extends across the middle line at the point of junction of the paired and single median scuta.

The external surface of the dentary bone is marked with short oblique grooves along its middle region; above these are grooves which inosculate, forming a figure like an open net dragged in the long direction. Excepting the grooves the teeth are smooth. The smaller ones are close together, and their crowns are curved backwards; the larger ones are at more remote intervals; both have enlarged bases; whether both forms are in the same series I cannot determine. There are from four to five of the smaller in an inch.

	M.
Depth of fragment of jaw (margin wanting) . . .	.075
Length smaller teeth . . . . .	.019
“ longer “ . . . . .	.023
Width of vertex at middle scuta . . . . .	.176
“ of paired median scuta . . . . .	.056
“ of single “ . . . . .	.036
Length of “ “ . . . . .	.048

Some vertebræ were found at the same locality, but there is no evidence as to the species to which they may have pertained. They are short, concave on one end and probably so on the other. The centrum of one is .012 in. in diameter; neural arches injured.

The *Leptophractus* was about as large as a medium sized alligator.

CONCHIOPSIS, Cope.

This genus is represented by specimens of several species which all agree in the structure of the scales. These resemble those of the *Gyroptychius* of McCoy, in having longitudinal curved ridges, which converge to the posterior margin round an imaginary axis. A rather complete specimen which may be regarded as type, has two dorsal fins and one anal; neither these nor the ventrals are clearly lobate. The caudal fin is equally developed above and

below the tapering vertebral column. It is broken off in the type, but in another specimen is evidently quite elongate, and of the protocercal or isocercal type. There are two huge oval gular plates, as I suppose them to be, which are well separated from each other and of a broadly oval form.

In another specimen the dentition of one of the jaws is exhibited as a double series of small, subequal, subconical crowns. In still another the pectoral fin is displayed as broadly and obtusely lobate. Whether these all belong to the same genus may be uncertain, but their resemblance is very close. Size not large. The genus is evidently allied to the *Cyclodipteridæ*.

CONCHIOPSIS FILIFERUS, Cope.

About twelve rows of scales between the dorsal and ventral fins, which stand opposed to each other, and half way between the gular shields and the line of the equally opposite second dorsal and ventral. Sculpture of the gular plates, a longitudinal thread-like ribbing parallel to the inner borders.

	M.
Length from gular plates to anal fin . . . . .	.057
Depth at D. 1 . . . . .	.038
" D. 2 . . . . .	.026

The type specimen was obtained and presented to me by my friend William Kite.

CONCHIOPSIS ANGULIFERUS, Cope.

Established on a specimen of larger size than the last species, but in which the scales are similar and therefore relatively smaller. The gular plates have a band of delicate ridges around their outer margins, and numerous ridges which diverge from the middle of the scale to the band. These ridges are undulate. Posterior to the plates on each side is a long incurved bone, perhaps the mandibular angle. The pectoral fin contains about thirteen radii. Prof. Newberry's collection.

CONCHIOPSIS EXANTHEMATICUS, Cope.

Established on a cranium entirely preserved as to its outline, with adjacent portion of space for chorda dorsalis and osseous ribs. The head is covered with thin scuta, which are very faintly sculptured with a few raised lines. The gular shields are oval and sculptured with elevated points, producing a weakly rugose sur-

face. The teeth above described are on this fish. There are six in three mm.

	M.
Width at shields . . . . .	.055
“ at middle muzzle . . . . .	.030
Length of head . . . . .	.045

Prof. Newberry's collection.

PEPLORHINA, Cope.

Established on a species similar to those of the last genus, but with a peculiar sculpture of the scales, which consists of raised points or small tubercles. There is a lateral line of tubes which I cannot find in *Conchiopsis*. An angular bony shield is present behind the gular scutum. There are well ossified ribs, but the structure of the fins cannot be made out at present.

PEPLORHINA ANTHRACINA, Cope.

Scales large, well imbricated; each one is .01 m. in elevation, and three enter .02 longitudinally. The gular and other scuta are smooth, except a band of shallow grooves round the margin.

	M.
Length of gular scutum . . . . .	.021
“ scute behind it . . . . .	.014

From Prof. Newberry's collection.